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CONSTRUCTION COSTS ON A CHURCH EDUCATION BUILDING



CHURCH EDUCATION BUILDING

Total Building Cost: \$107,721

\$30.78 per sq. ft. for building area of 3,500 sq. ft.

\$10.26 per sq. ft. for floor area of 10,500 sq. ft.

\$ 0.85 per cu. ft. for volume of 126,000 cu. ft.

THERE is a trend today by many church congregations to erect an educational building before the sanctuary is built. Many denominations are encouraging new congregations to follow this procedure in order to provide adequate Sunday school area, dining and recreational facilities, in addition to the space needed for an auditorium or worship center. An education building is generally a practical, efficient, and economic structure, whereas a church sanctuary type building is generally replete with expensive architectural details and appointments. A young, struggling congregation thus often prefers to delay the construction of a sanctuary as such in order to meet the pressing need for educational and other facilities at the least possible cost.

Considering this trend, we are providing our subscribers with detailed cost information on a well-built, low-maintenance church education building just being completed in St. Louis. As pictured, the building has two stories

and a finished basement or ground floor. The architecture is basically of contemporary design, but not so severe that it will not blend with the later addition of a sanctuary with a more traditional design. The elevation shown overlooks a public park and provision has been made for the later addition of a sanctuary on the other side of the building toward a main thoroughfare. The basement or first floor is below ground level on two elevations; however, the entire lower level of the building is finished except for the furnace room. The building has outside measurements of 70' x 50' covering a total ground area of 3,500 square feet.

The building has 13" masonry walls, with the exterior walls of buff face brick. The interior face of the exterior walls is painted haydite block. The spandrel panels are of Glasboard, a porcelain finish on asbestos cement board. The cells of all the haydite blocks on the exterior walls are filled with zonolite. Floor and roof construction is of 8" precast concrete Flexicore slabs with 2 inches of concrete finish. The longest span on the Flexicore slabs was 32'. The slabs are of prestressed concrete with a design live load of 100 pounds per square foot. This design resulted in an overall dimension from ceiling to finish floor of 10", thus enabling the architect to reduce the overall height of the building by approximately 3'.

An additional advantage of this design was that the Flexicore slabs, when painted, provide a finished ceiling. There is a 3' overhang around the entire building. Interior partitions on the first floor are painted haydite block, while partitions on the other two floors are 5/8" plasterboard on steel studs. Finish floors are asphalt tile. The roof is built-up tar and gravel over fiberglass insulation board. The building is heated with forced warm air. The blowers and ducts are designed for future cooling, but refrigeration is not installed at this time. There are a total of 21 plumbing fixtures installed; the kitchen is not a part of the contract, but plumbing is roughed in for future installation.

BUILDING COST DATA

The building is now ready to be occupied and has a total floor area of 10,500 square feet and a total content of 126,000 cubic feet. The total cost, including architect's fee, contractor's profit, but excluding financing charges, is \$107,721, or \$0.85 per cubic foot. It is estimated that the addition of air conditioning equipment to this building will result in an added cost of about \$11,000, or an additional \$0.09 per cubic foot, making the cube cost factor \$0.94. The cost per square foot of floor area is \$10.26 without air conditioning, or \$11.30 per square foot air-conditioned.

Variations will exist on this type of structure. Consequently, the cost can be broken down as follows: \$18,582 was spent for plumbing, heating, and electrical work; the interior work cost \$22,910; and the building shell cost \$66,229. The unit figures for these items are: 15¢, 18¢, and 53¢ per cubic

foot, respectively. This building contains 21 plumbing fixtures, Projecting this number into the plumbing contract, we have an average cost per fixture of \$185. Included in the plumbing contract, but not considered as a fixture, was water supply and drain for a baptistry tank that was not part of the contract.

Several other items that relate to site improvement that were not part of this contract, but which should be contained in a construction cost appraisal, are as follows: Retaining walls, landscaping, parking area paving, parking area lighting, driveway paving, etc.

It must be noted that this building is completely devoid of any expensive appointments or finish. The intent was to build a sound, low-maintenance structure that could later be improved or embellished as circumstances would permit without the necessity of any changes in the structure or its utilities.

An itemized breakdown of construction and unit costs follows.

GENERAL SPECIFICATIONS

Space does not permit an account of the detailed specifications for this building. The specifications indicated below are general in nature, but give sufficient information to indicate the manner and type of construction.

General Conditions. The contractor shall provide all services and facilities necessary for the proper prosecution of the work; provide public liability, property damage and workmen's compensation insurance. All materials used shall be sound, new, and of good quality. All work shall be done in a skillful and workmanlike manner and shall be guaranteed for a period of one year from the date of acceptance by the owner.

Excavation and Grading. This contractor shall excavate for the basement, wall, and column footings to grades and lines as established by the general contractor. He shall do all filling and backfilling, and grade and place the excavated earth to form the finished grade levels of the building. Grade excess dirt around the site to provide a uniformly graded site.

Reinforced Concrete - Finish Concrete. This contractor is responsible for the following work: All necessary forms for walls, footings, concrete stairways, furnish and install all reinforcing steel as shown on plans, furnish and place all rock fill under basement slab, furnish and place all ready-mixed concrete for footings, walls, stairways, floor slabs, porches and driveway entry. All finished concrete shall have a monolithic finish. All concrete shall have a minimum of five sacks of cement per cubic yard.

Brickwork. Furnish and install all brick, concrete blocks, haydite blocks, glass blocks, and mortar to do brickwork as shown on plans. Brick shall be buff brick to be selected by owner at \$63 per thousand.

**BREAKDOWN OF CONSTRUCTION AND UNIT COSTS
OF A CHURCH EDUCATION BUILDING**

	<u>Cost</u>	<u>Cost per Bldg. Area</u>	<u>Sq. Ft. Floor Area</u>	<u>Cost per Cu. Ft.</u>	<u>% of Total Cost</u>
Excavation & grading	\$ 920	\$ 0.26	\$ 0.09	\$.01	.85
Concrete foundation	3,000	0.86	0.29	.02	2.78
Brickwork	19,550	5.59	1.86	.16	18.15
Structural steel & misc. iron . .	6,358	1.82	0.61	.05	5.90
Flexicore slabs	14,571	4.16	1.39	.12	13.52
Drain tile	200	0.06	0.02	.0016	.18
Finish concrete	5,600	1.60	0.53	.04	5.19
Concrete stairways	2,000	0.57	0.19	.01	1.85
Electric work & fixtures	3,996	1.14	0.38	.03	3.70
Heating & ventilating	7,962	2.27	0.75	.063	7.39
Plumbing	3,899	1.11	0.37	.03	3.61
Plumbing service lines	600	0.17	0.06	.0048	.55
Steel door jambs	808	0.23	0.08	.0064	.75
Lumber & Glasboard panels . . .	1,350	0.38	0.13	.01	1.25
Carpentry, misc. labor, ins. & Social Security	7,100	2.02	0.68	.056	6.59
Steel studs & drywall	1,933	0.55	0.18	.015	1.79
Millwork	1,400	0.40	0.13	.011	1.29
Sheet metal work	1,098	0.31	0.10	.0087	1.00
Aluminum sash	1,483	0.42	0.14	.011	1.37
Rough & finish hardware	1,010	0.29	0.10	.0080	.94
Roofing & roof insulation	1,087	0.31	0.10	.0086	1.00
Marble sills	598	0.17	0.06	.0047	.55
Insulation, wall & perimeter . .	660	0.19	0.06	.0052	.61
Caulking & weatherstripping . .	547	0.16	0.05	.0043	.50
Painting	2,800	0.80	0.27	.022	2.59
Driveway & parking lot, rock only	1,080	0.31	0.10	.0086	1.00
Glass & glazing	525	0.15	0.05	.0042	.48
Asphalt tile	2,500	0.71	0.24	.0198	2.32
Metal toilet partitions	786	0.22	0.07	.0062	.72
Permits, misc., sundry	900	0.26	0.09	.0071	.84
Bond	900	0.26	0.09	.0071	.84
Engineer's & architect's fees .	1,500	0.43	0.14	.012	1.39
Contractor's overhead & profit	9,000	2.57	0.86	.07	8.35
Total	\$107,721	\$30.75	\$10.26	.8453	99.84

Electrical Work. Do all electrical work as shown on plans to conform to city code. Furnish and install all electric fixtures and exit lights as required by the Fire Marshall.

Structural Steel. Furnish and install all structural steel, miscellaneous iron, railings, lintels as shown on plans.

Flexicore Slabs. Furnish, install, and caulk joints on Flexicore slabs as shown on the plans for two floors, stair landings, and roof. Slabs shall be 8" thick and shall meet the structural requirements of the St. Louis Building Commissioner's office.

Heating and Air Conditioning. This contractor shall install a complete gas-fired forced-air heating and ventilating system that will provide for 75° F. interior at 0° F. exterior. The blowers and ducts shall be designed to provide 20° F. differential for a future cooling system. Separate blowers and heaters shall be provided for each floor complete with the necessary controls. Provide adequate fresh air for complete change of air every 10 minutes.

Plumbing. Furnish and install all soil, waste, and vent lines, water piping, plumbing fixtures, and water heater as shown on plans. Provide all necessary permits for plumbing work. Do all work necessary to provide a complete system. Furnish and install all gas piping to furnaces and kitchen range.

Steel Door Jambs. Provide steel door jambs complete with hinges for all interior and exterior doors as shown on the drawings.

Carpentry - Lumber - Millwork. Furnish and install all doors, lumber, rough hardware, and miscellaneous trim to do work as shown on drawings. Install aluminum sash and steel door jambs, furnish and install Glasboard panels in spandrels between windows as shown on plans. Furnish and install zono-lite fill in concrete blocks, perimeter insulation around basement walls at floor line, and rock wool insulation in holes of Flexicore slabs on overhang. Install finish hardware.

Steel Studs and Drywall. Furnish and install 2½" U. S. Gypsum steel studs for all partitions on the first and second floor as shown on plans. Face both sides of partitions with 5/8" plasterboard and tape all joints ready for paint. Cover all steel beams and columns with steel studs and 5/8" plasterboard.

Sheet Metal Work. This contractor shall provide all necessary copper scuppers and copper downspouts, as shown on plans. Furnish 16-gauge aluminum cornice around the entire building and on entrance canopies.

Roofing. Install a 20-year tar and gravel roof laid over 3/4" rigid fiber-glas insulation board. Do all necessary flashing around vents, stacks, chimneys, etc.

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Finish Hardware. Allow \$900 for finish hardware.

Caulking and Weatherstripping. Caulk around all aluminum sash, interior and exterior doors in masonry walls. Caulk joints where plasterboard partitions meet the Flexicore slabs and masonry walls. Furnish and install aluminum saddle thresholds on all exterior doors.

Marble Sills. Furnish and install 3/4" Carthage marble sills on the interior of all aluminum sash and glass block openings.

Painting. Furnish all material and labor to provide two coats of paint on all interior walls and ceilings, metal hand rails, and all metal door frames. Stain and apply two coats of varnish to all doors, interior and exterior.

Driveway and Parking Lot. Do all work necessary to properly grade the driveway and parking lot prior to placing rock. Place approximately 4" of 2" rock over the entire area, roll with 10-ton roller, follow with 2" of 2" minus rock, then choke with 1/2" clean chips, roll again with 10" roller to smooth, even surface.

Asphalt Tile. Cover all floors with 9 x 9 x 1/8" thick asphalt tile in Group "C." Furnish and install rubber base on all interior partitions on first and second floor. Do not cover floors of furnace rooms.

Metal Toilet Partitions. Furnish and install metal toilet partitions of flush type baked-on paint enamel over bonderized steel. Provide each stall with paperholder for roll paper, coat hook, slide bolt lock and latch, gravity-type ball bearing hinges; all fittings and hardware shall be chrome plated.

Glass and Glazing. Furnish and install DSA glass in all aluminum sash and all interior and exterior doors and transoms as called for in the drawings. All glass shall be setting in a bed of glazing compound.

Bond. The General Contractor shall furnish a 100 percent performance and payment bond for the full amount of the contract.

Thomas W. Kirk
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